

Application No.: 10/776155

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REMARKS

Claims 1-3, 5-22, 25-34 and 36-43 are pending. Claim 1 is amended. The basis for amendment to claim 1 can be found in the application as filed, for example, at p. 14, lines 14-18 and Figs. 2B, 3B, 7, 10B and 13. Reconsideration of the present application in view of the foregoing amendments and the following remarks is respectfully requested.

§ 103 Rejections

Claims 1-3, 5-9 and 11-15 stand rejected under 35 USC § 103(a) as being obvious over Serizawa et al. US 4,733,335 ("Serizawa") in view of Tai et al. US 5,506,929 ("Tai") and Karasawa et al. US 2001/0033367 ("Karasawa"). Without acquiescing to the examiner's arguments and to expedite the prosecution of this application, the Applicants have amended claim 1 to recite that "a geometrical figure having the shape and size of the proximal end can be completely enclosed within a geometrical figure having the shape and size of the distal end." None of the cited references disclose at least this limitation. The Examiner admits that Serizawa fails to teach a pyramid collector, such that the shape and size of the proximal end are different from the shape and size of the distal end. Tai also fails to teach this limitation.

Contrary to the Examiner's statement, it would not have been obvious to combine the rod 220 of Karasawa with the device of Serizawa. A person of ordinary skill in the art would not be motivated to combine the vehicular lamp system of Serizawa with Tai and Karasawa, which are directed to a light expanding system for converting a light beam generated from a point-like source into a collimated beam and a projector, respectively. In addition, the rod 220 of Karasawa is not "mounted onto one emitter over its emitting surface." Instead, Karasawa teaches an elliptical reflector having one focus at the light source and the other one at or near the entrance 22 of the rod 20 and a mirror 13 for bending light towards the rod 20. Therefore, mounting the rod 20 onto the light source 11 would destroy the intended operation of the system described in Karasawa.

But in any case, Karasawa does not disclose or suggest that "a geometrical figure having the shape and size of the proximal end can be completely enclosed within a geometrical figure having the shape and size of the distal end." Fig. 8 shows a rod 220 having an entrance end 222

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and an exit end 226 connected by facets 224b and 224d that are tapered toward each other. Therefore, the geometrical figure shaped and sized as the entrance end 222 cannot be completely enclosed within the geometrical figure shaped and sized as the exit end 226. For at least these reasons, claim 1 is not obvious in view of these references.

Dependent claims 2-3, 5-9 and 11-15 are patentable for at least the same, as well as additional reasons. Serizawa also does not disclose the additional limitations of claims 2, 3 and 6. As it is clear from Fig. 12, the bottom of the parabolic reflector 157 is much larger than the light source 111. Therefore, it cannot be in contact with the emitting surface of the light source 111. In addition, Serizawa contains no disclosure concerning the size and shape of any emitting surface.

With regard to claim 5, the Examiner admits that Serizawa does not teach that the through-holes can have one end that is square and another end that is rectangular. Karasawa also does not teach this limitation, because it is the entrance end 222 that appears to have a rectangular shape and not the exit end 226.

With regard to claim 11, Fig. 7 of Serizawa does not show any pincushioned shapes of distal ends of reflectors, such as the shape shown in Fig. 7 of the present application. Instead, the ends of the through-holes shown in that figure are square.

With regard to the Examiner's discussion of claim 13, col. 4, lines 50-52, of Serizawa refers to the embodiment of Fig. 2, which does not show any structures that could be referred to as collectors within the meaning of the present disclosure, and the dimensions cited therein instead refer to the size of the condenser lenses 127.

Claim 10 stands rejected under 35 USC § 103(a) as being unpatentable over Serizawa, Tai and Karasawa as applied to claim 8 and further in view of Yasumoto et al US 4,733,355 ("Yasumoto"). The Applicant respectfully disagrees. Claim 10 is not obvious over the cited references for the reasons presented above in connection with claim 1. In addition, Yasumoto does not disclose the additional elements of claim 10. For example, Yasumoto, at col. 4, line 50-51, describes the element 44 as "a plurality of spaced ribs." Therefore, Yasumoto does not teach or suggest "a generally disc-shaped flange" as required by claim 10. Further, the requisite motivation to combine the cited references and reasonable expectation of success are absent. Thus, claim 10 is not obvious over the cited references.

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Claims 16, 17, 19, 21, 22, 25, 26, 31 and 36-43 stand rejected under 35 USC § 102(b) (the Applicants presume the Examiner meant 103(a)) as being obvious over Tiao et al. US 6,318,863 ("Tiao") in view of Tai. The Applicant respectfully disagrees and submits that the cited references do not disclose all elements of independent claim 16 and, consequently, those of claims dependent thereon.

With regard to claim 16, Tiao does not disclose a plurality of light source modules, each light source module including a pyramid collector mounted onto one emitter. Instead, Tiao discloses, e.g., at col. 3, lines 12-13, that the first end of each tapered light pipe is "closely connected with each of the light emitting modules 202." Therefore, the light pipes are not parts of the light source modules. This is consistent with all figures of Tiao, which show a gap between the light source modules and the light pipes without any means of mounting these separate elements onto one another. In addition, Tiao does not teach or suggest pyramid collectors "wherein the shape and size of the proximal end are different from the shape and size of the distal end." Instead, Tiao states, for example, at col. 5, lines 43-47, that the pipes can be conical, rectangular, or cylindrical. All of these types of light pipes have first ends that have the same shapes as second ends. Tai also does not teach or suggest pyramid collectors "wherein the shape and size of the proximal end are different from the shape and size of the distal end." The Examiner refers to Fig. 1 of Tiao as allegedly showing this element. However, Figs. 1A and 1B (labeled "Prior Art") of Tiao do not show any such pyramid collectors.

For at least the foregoing reasons, the cited references do not teach all elements of claim 16. Dependent claims 17, 19, 21, 22, 25, 26, 31 and 36-43 are patentable for at least the same, as well as additional reasons.

For example, Tiao does not disclose the additional limitations of claim 19. All embodiments of Tiao include light source modules that have optical axes aligned with each other and, therefore, cannot be referred to as "aimed substantially into the illumination target."

With regard to claims 21, 22 and 25, Tiao does not disclose a proximal end of a pyramid collector in contact with an emitting surface, having approximately the same shape and dimensions as the emitting surface, or fitted around the emitting surface. These affirmative limitations cannot be simply inferred from Tiao's statement that the first end of each tapered light pipe is "closely connected with each of the light emitting modules 202." Furthermore, Tiao shows appreciable gaps

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between the light source modules and the light pipes. Just because the reference states that the tapered light pipes collect light from the light emitting modules, it does not follow that the claim limitations are satisfied.

With regard to claim 26, Tiao does not disclose a straight rectangular pipe section comprised in each light source module. Elements 420 in Fig. 4B are separate from the array of light pipes 410, which, in turn, are separate from the light sources 402. These elements are not assembled together into discrete light source modules. In addition, as it is apparent from Fig. 4A, straight pipes 420 are shared by arrays of light pipes and therefore each light pipe does not comprise a straight rectangular pipe section, as required by claim 26.

With regard to claim 36, the Examiner admits that Tiao does not disclose the additional limitation of claim 36. Tai also does not teach this limitation. Fig. 1 clearly shows that both ends of the element 28 are rectangular, i.e., have pairs of sides of unequal length disposed at right angles with respect to each other. A well-known definition of a square requires that all of the sides have equal length. Further, the element 28 does not have proximal and distal ends having different shapes – they are both rectangular. Moreover, the devices of Tiao and Tai are not similar. They have completely different function and structure.

With regard to claim 37 and claims 38-40 dependent thereon, Tiao does not disclose an illumination system configured such that the system of optical elements images the distal end of each pyramid collector onto the illumination target. Fig. 9B is a simplified schematic representation of an optical system, from which it is impossible to discern any particular imaging characteristics of the system, and the description of Tiao is silent in that respect.

With regard to claim 41, Figs. 1A and 1B (labeled "Prior Art") of Tiao do not show any light source modules including pyramid collectors as described and claimed.

With regard to claims 42-43, it is respectfully submitted that at least in the context of the present application "substantially square" does not have the same meaning as "substantially rectangular." As it is clear from the Applicant's disclosure, the terms are used according to their ordinary meaning, i.e., "square" is used to refer to a four-sided geometrical shape with all right angles and equal sides, while "rectangular" is used to refer to a four-sided geometrical shape with all right angles and pairs of sides that differ in length.

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Claim 18 stands rejected under 35 USC § 103(a) as being obvious over Tiao and Tai as applied to claim 16 and further in view of McClelland et al. US 6,201,629 ("McClelland"). The Applicant respectfully disagrees and submits that the cited references do not disclose all elements of independent claim 16 and, consequently, those of claims dependent thereon. Furthermore, McClelland does not teach the additional limitations of claim 18.

McClelland is directed to a torsional micro-mechanical mirror system, but it does not disclose or suggest an **illumination system** wherein a plurality of light source modules is disposed within a non-radially symmetrical aperture having a long dimension and a short dimension. The Examiner argues that the micro-mirrors of McClelland have apertures with a short dimension and a long dimension. However, claim 18 requires that it is the non-radially symmetrical aperture within which the light source modules are disposed that has the long dimension and the short dimension – not the mirrors themselves. Furthermore, the claim requires that the long dimension of the non-radially symmetrical aperture (within which the light source modules are disposed) and not that of the mirrors themselves be aligned with the pivot axis of the mirrors.

Claim 20 stands rejected under 35 USC § 103(a) as being obvious over Tiao and Tai as applied to claim 19 and further in view of Anderson et al. US 5,997,150 ("Anderson"). The Applicant respectfully disagrees and submits that the cited references do not disclose all elements of independent claim 16, dependent claim 19 and, consequently, those of claim 20 for the reasons explained above and also the following reasons.

Anderson does not disclose channels aimed substantially into the image-forming device. Instead, in Figs. 6 and 7, Anderson shows light emitting elements that have principal rays intersecting at a point F that is taught to be in the vicinity of the holographic diffuser 16 and not the image-forming device. Therefore these light sources and associated optics do not form channels aimed substantially into the image-forming device.

Claims 27-29 stand rejected under 35 USC § 103(a) as being obvious over Tiao and Tai as applied to claim 16 and further in view of Yasumoto. The Applicant respectfully disagrees and submits that the cited references do not disclose all elements of independent claim 16, and, consequently, those of claims 27-29 for at least the reasons explained above in connection with the discussion of claims 9, 10 and 16.

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Claims 30 and 32 stand rejected under 35 USC § 103(a) as being unpatentable over Tiao, Tai as applied to claim 16 and further in view of Serizawa. The Applicant respectfully disagrees. Claims 30 and 32 are not obvious over the cited references for at least the reasons presented above in connection with the discussion of claims 11, 13 and 16.

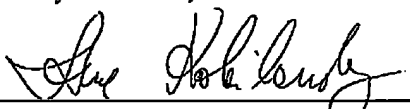
Claims 33 and 34 stand rejected under 35 USC § 103(a) as being unpatentable over Tiao in view of Tai. The Applicant respectfully disagrees. Claims 33 and 34 are not obvious over the cited references for at least the reasons presented above in connection with the discussion of claims 14, 15 and 16.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is respectfully requested.

Allowance of claims 1-3, 5-22, 25-34 and 36-43 at an early date is earnestly solicited.

Respectfully submitted,

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Date

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